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ABSTRACT

Volume 3 of the 19-volume Highway Safety Program Manual (which provides guidance to State and local governments on preferred highway safety practices) concentrates on aspects of motorcycle safety. The purpose and specific objectives of a State motorcycle safety program are outlined. Federal authority in the highway safety area and general policies regarding a comprehensive State motorcycle safety program are described. Requirements and recommendations are presented for use in the implementation and operation of seven motorcycle safety program areas: motorcycle operator education and training, licensing, motorcycle operation, personal protective equipment, vehicle equipment, vehicle inspection, and motorcycle crash and injury records and reports. Procedures for evaluating the safety program, a reporting system, and local government participation in the safety program are outlined. Appendixes contain the Highway Safety Program Standard 4.4.3, Motorcycle Safety, a glossary of definitions; references; a list of representative projects; a list of resource organizations; Federal Motor Vehicle Safety Standard No. 108 and No. 205; and a supplemental accident report form. (NH)

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FEDERAL HIGHWAY ADMINISTRATION
NATIONAL HIGHWAY SAFETY BUREAU
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HIGHWAY SAFETY PROGRAM MANUAL

Transmittal 2
January 17, 1969
42-01

1. MATERIAL TRANSMITTED

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None

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Federal Highway Administrator

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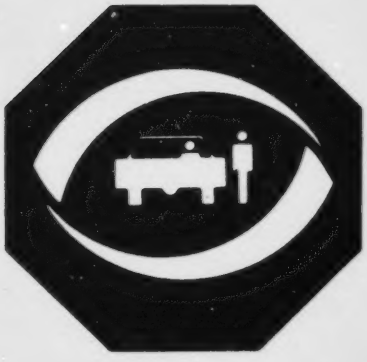
highway safety program manual



vol. 3 motorcycle safety

DEPARTMENT OF TRANSPORTATION : Federal Highway Administration : National Highway Safety Bureau

HIGHWAY SAFETY PROGRAM MANUAL

VOLUME 3

MOTORCYCLE SAFETY

Nothing in this volume makes optional any mandatory requirement contained in promulgated Highway Safety Program Standards

FOREWORD

As part of the Highway Safety Program Manual, this volume is designed to provide guidance to State and local governments on preferred highway safety practices. Volumes comprising the Manual are:

0. Planning and Administration
1. Periodic Motor Vehicle Inspection
2. Motor Vehicle Registration
3. Motorcycle Safety
4. Driver Education
5. Driver Licensing
6. Codes and Laws
7. Traffic Courts
8. Alcohol in Relation to Highway Safety
9. Identification and Surveillance of Accident Locations
10. Traffic Records
11. Emergency Medical Services
12. Highway Design, Construction, and Maintenance
13. Traffic Control Devices
14. Pedestrian Safety
15. Police Traffic Services
16. Debris Hazard Control and Cleanup

The volumes of the Manual supplement the Highway Safety Program Standards and present additional information to assist State and local agencies in implementing their highway safety programs.

The content of the volumes is based on the best knowledge currently available. As research and operating experience provide new insights and information, the Manual will be updated.

The volumes of the Highway Safety Program Manual deal with preferred highway safety practice and in no way commit the Department of Transportation to funding any particular program or project.

Many expert organizations and individuals at all levels of government and in the private sector contributed heavily in the preparation of the volumes of the Manual. The Department appreciates greatly this help in furthering the national program for improving highway safety for all Americans.

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2. Purpose
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1. INTRODUCTION

a. The use of motorcycles for transportation and recreation in this country grew rapidly during the past decade, and registration of motorcycles increased by more than 400 percent during this period. The annual increase in registration in 1968 was approximately 200,000 units.

b. These increases in registration of motorcycles have been paralleled by increases in deaths and injuries resulting from motorcycle crashes.* Because of the severe consequences of motorcycle crashes, it is incumbent upon each State to develop an effective motorcycle safety program. Where this has been done, sharp decreases in motorcycle deaths and death rates have occurred.

2. PURPOSE

The States should implement a motorcycle safety program which provides for safe operation of motorcycles on public roadways with safe and proficient operators, properly maintained vehicles, and adequate administrative supervision and regulation.

3. SPECIFIC OBJECTIVES

The State motorcycle safety program should seek to accomplish the following objectives:

* See 1967 in comparison with 1966 data in Exhibit I.

a. Provide for education and training in the proper and safe operation of a motorcycle.

b. Ensure that each person who operates a motorcycle is properly tested and licensed.

c. Encourage safe operation of motorcycles and compliance with applicable traffic laws.

d. Ensure that motorcycle riders wear approved personal protective equipment.

e. Ensure that required safety equipment is installed on the vehicle.

f. Ensure that motorcycles are inspected on a regular basis.

g. Establish and maintain adequate records on motorcycle crashes, injuries, deaths, and traffic law violations. Such records should specifically include information as to whether each person killed or otherwise injured was properly wearing approved protective devices at the time of the crash in which he was involved.

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Chapter 4 of Title 23, U.S.C. (hereinafter referred to as the Highway Safety Act of 1966) authorizes and directs the Secretary of Transportation to promulgate uniform standards to be met in the design of State highway safety programs. Specifically, section 402(a) of Title 23 requires that:

> "Each State shall have a highway safety program approved by the Secretary designed to reduce traffic accidents and deaths, injuries, and property damage resulting therefrom. Such programs shall be in accordance with uniform Standards promulgated by the Secretary."

The Secretary has promulgated Standard 4.4 3. Motorcycle Safety, (Appendix A), which presents requirements to be met in the design and implementation of the State motorcycle safety program.

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Par. 1. Introduction
2. Policies

1. INTRODUCTION

a. This volume augments the requirements of the Motorcycle Safety Standard to suggest and recommend to the States additional guidelines which should be part of an effective State motorcycle safety program.

b. The guidelines set forth in this volume seek an appropriate balance between safety achieved through statutory regulation of motorcycling and safety achieved through the development of well informed, well trained, and well motivated operators of motorcycles and other vehicles.

2. POLICIES

In the interest of promoting a comprehensive State motorcycle safety program, the State should:

a. Provide for education and training to produce qualified motorcycle operators.

b. Properly and uniformly regulate motorcycle operation.

c. Set performance standards for safety helmets and eye protection devices.

d. Provide for complete and systematic crash reporting.

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3. Motorcycle Operator Licensing
4. Motorcycle Operation
5. Motorcycle Personal Protective Equipment
6. Motorcycle Vehicle Equipment
7. Motorcycle Vehicle Inspection
8. Motorcycle Crash and Injury Records and Reports

1. MOTORCYCLE SAFETY PROGRAM DEVELOPMENT

a. Introduction.

The motorcycle safety program set forth in the Standard and further defined in this volume comprises seven program areas. Requirements and recommendations for use in the implementation and operation of these program areas are presented in this chapter. With the exception of motorcycle operation, personal protective equipment, and vehicle equipment, these program areas should be implemented in conjunction with the corresponding programs presented in other volumes of this manual.

b. Planning.

The first phase in the development of a comprehensive motorcycle safety program is planning. The guidance given in this volume is intended to assist in the:

(1) Establishment of program goals and objectives.

(2) Definition of procedures to be used in implementing the program.

(3) Determination of resource requirements (manpower, facilities, equipment, costs, etc.).

(4) Definition of areas of needed coordination with other agencies.

(5) Establishment of responsibilities for the implementation and operation of the program areas.

(6) Establishment of a program budget.

(7) Scheduling of the implementation of the program.

(8) Development of a plan for evaluating the program.

c. Implementation.

(1) This volume also provides guidelines to assist in the implementation of the motorcycle safety program. Where applicable, references are made to other volumes which provide implementation procedures for related motor vehicle programs.

(2) During implementation, consideration should be given to the establishment of administrative controls to monitor the operation of the program and the establishment of procedures to evaluate the program.

(3) Consideration should be given to the authority provided by the State's legislature to ensure that it is adequate for the needs of the motorcycle safety program.

2. MOTORCYCLE OPERATOR EDUCATION AND TRAINING

a. Introduction.

(1) More than 50 percent of the motorcycle crashes involve operators with less than two years of operating experience. This suggests that education and training are needed to prepare novice motorcyclists for the initial period of operation.

(2) Although over 50 percent of the States now require licensing of motorcycle operators, there does not appear to be any Statewide motorcycle education and training program. Most motorcyclists are self-taught, taught by a friend, or given minimum instruction on machine operation by a motorcycle dealer.

(3) There are a number of programs initiated at the community level throughout the United States aimed at developing qualified motorcycle operators. These programs have been particularly successful when jointly sponsored by such organizations as motorcycle dealers, local police departments, local automobile clubs, etc.

b. Objectives.

The State driver education program should provide for the establishment and administration of motorcycle operator education and training courses. An individual completing such a course should understand and appreciate each essential facet involved in safe operation of a motorcycle under all traffic conditions, classes of roads and highways, and climatological conditions.

c. Recommendations.

The motorcycle education and training courses should consist of both classroom instruction and controlled roadway operation. Courses should treat, but not be limited to, the following areas of study:

(1) Basic and advanced driving procedures, including techniques for coping with emergency situations.

(2) Rules of the road, State laws, local ordinances, and motorcycle equipment requirements.

(3) Preventive vehicle maintenance with emphasis on critical motorcycle systems and subsystems.

(4) Operation of motorcycles on streets and highways.

(5) Measures designed to:

(a) Aid the operator in avoiding crashes.

(b) Protect the operator and passenger in crashes.

(c) Improve the care and transportation of those injured.

(6) Signs, signals, highway markings, and highway design features which require understanding for safe motorcycle operation.

(7) Differences in characteristics of urban and rural driving, including safe use of expressways.

(8) Hazardous road conditions including holes, sand and rocks, oil slicks, ice, rain and snow, curves, bridge gratings, bankings of roads, railroad tracks, etc.

(9) The importance of personal safety clothing and motorcycle safety equipment.

d. Implementation.

(1) Commercial schools should be licensed by the appropriate State governmental agency or agencies.

(2) Instructors should be licensed or certificated by the State to ensure their competence in motorcycle instruction.

(3) A standard curriculum should be developed by the State to ensure that comprehensive instruction is given.

(4) Vehicles used in instruction should conform to State inspection requirements and be insured to protect both the student and school.

(5) Schools should provide personal protective equipment as required by the State.

(6) The State program should be implemented in accordance with guidelines set forth in Volume 4 of this manual, Driver Education.

3. MOTORCYCLE OPERATOR LICENSING

a. Requirement.

Each person who operates a motorcycle on public roadways should pass an examination or reexamination designed especially for motorcycle operation and should hold only one license specifically authorizing motorcycle operation. If the person is licensed to operate another vehicle and the qualifications for motorcycle operation are also met, the license should be endorsed to permit motorcycle operation.

b. Recommendations.

Recommendations for licensing of motorcyclists set forth in this volume are intended to supplement, not supersede, the recommendations set forth in Volume 5 of this manual, Driver Licensing.

(1) Driver's manual.

A manual or handbook should be prepared by the State driver licensing agency to inform all drivers and driver license applicants about the rules of the road, safe driving procedures, etc. This manual should contain information specifically pertaining to the rights of motorcyclists and the capabilities and limitations of motorcycles.

(2) Motorcycle license examination.

(a) General.

1 All applicants for a motorcycle operator's license should successfully complete a motorcycle license examination. No "grandfather's clause" or equivalent measure should allow anyone to hold a motorcycle operator's license who has not completed and passed a suitable motorcycle license examination.

2 The State motorcycle license examination should consist of a medical and vision screening, a knowledge test, and an operating test.

3 Training of driver license examiners should include instruction in the administration of the motorcycle license examination.

(b) Medical criteria.

1 Motorcyclists should be required to meet the same medical criteria as persons licensed to operate other motor vehicles.

2 Where there is a question about the ability of a person to operate a motorcycle safely because of a physical or mental impairment, a report, of a form and content specified by the State driver license administrator's Medical Advisory Board, should be required from a licensed physician or, if the question relates to his vision, from an eye specialist.

3 The report should be evaluated against the criteria for driver fitness established by the State driver license administrator's Medical Advisory Board.

(c) Knowledge test.

1 An applicant for a motorcycle operator's license should be required to pass a knowledge test comparable to the test required of automobile license applicants.

2 The test should, in addition, contain questions specifically designed to determine the applicant's knowledge of techniques used to operate a motorcycle safely.

3 The knowledge test for other classes of motor vehicles should also contain questions pertaining to the rights of motorcyclists.

(d) Operating test.

1 General.

a The operating test should be administered by a qualified examiner.

b Where possible, off-street areas should be used for all or part of the test.

c The applicant may be required to demonstrate the ability to operate a motorcycle safely on public roadways.

d The operating test may be waived for motorcycle license renewal applicants if they have previously passed an equivalent motorcycle license examination.

2 Off-street road test.

The following are suggestions for a motorcycle off-street road test:

a A visual inspection should be made to ensure that the vehicle is in proper working condition and that the applicant is appropriately using the required safety helmet and eye protection device.

b The applicant should show he is familiar with the controls of the machine, what they do, and how they operate. These include the brakes, throttle, gearshift, clutch, and any other controls specific to his machine.

c The applicant should demonstrate the proper hand signals.

d The applicant should demonstrate the ability to start the machine, move forward, make starts, stops, and turns to the left and right (such as on a cone-weave or serpentine course) as designated by the examiner. Operation should be smooth, precise, and show the applicant's proper control of the machine and apparent confidence in himself. If possible, the applicant should be observed starting and stopping on an incline.

e The applicant should show an ability to negotiate Figure 8's at an adequate speed to maintain stability, while keeping both feet on the footpegs or floorboard. He should do these maneuvers in both directions while riding toward and away from the examiner.

f The applicant should execute slow speed circles to demonstrate his ability to make both right and left turns.

3 On-street road test.

In and on-street road test the following responses to various traffic conditions should be noticed:

a Is the applicant aware of his operating environment: the traffic approaching from the front, rear, and side, especially at intersections? Does he use his mirror and turn his head to check traffic?

b The applicant should be observed shifting gears using the clutch smoothly and at the proper time. Both upshifting and downshifting should be observed.

(3) Instruction permits.

An applicant should be issued an instruction permit to operate a motorcycle on public streets subject to the restrictions prescribed by the licensing administrator. Suggested considerations in the issuance of instruction permits include the following:

(a) The applicant should meet the same minimum age requirement as for an automobile instruction permit.

(b) The instruction permit should be issued only after the applicant has passed the knowledge and medical tests.

(c) The instruction permit should be valid only for a specified period of time.

(d) The applicant should operate the motorcycle on public roadways only while under the direct visual supervision of a person who has for at least one year been licensed to operate a motorcycle.

(e) The applicant should not carry a passenger, except as may be required as part of an approved operator training course.

(f) The applicant should not operate the motorcycle during the hours of darkness, except as may be required as part of an approved operator training course.

(g) The applicant should wear the required helmet and eye protection at all times during operation.

(4) Motorcycle license renewal.

States should consider the following suggestions in the establishment of procedures for motorcycle license renewal:

(a) Renewal should be required at least once every four years.

(b) A motorcycle license reexamination, consisting of a vision screening and a knowledge test, should be part of the renewal.

(c) No renewal license should be granted unless the applicant has at some time passed a suitable motorcycle license examination.

4. MOTORCYCLE OPERATION

a. Introduction.

There are certain actions which should be instituted by the State to promote safe motorcycle operation and eliminate unsafe practices of motorcycle operators.

b. Unsafe practices.

There are several unsafe practices currently in widespread use by motorcycle operators, including:

(1) Carrying passengers or materials in front of the operator which interfere with operator control.

(2) Sidesaddle riding by passengers.

(3) Riding between lanes of moving traffic.

(4) Riding between the traffic lane and parked cars.

(5) Passing other vehicles in the same lane.

(6) Use of same traffic lane by more than two motorcycles abreast.

(7) Carrying more passengers than the motorcycle's capacity.

(8) Passing other motor vehicles on the right where prohibited.

c. Implementation.

The following action should be considered by the State to encourage safer motorcycle operation:

(1) Enforce laws controlling unsafe practices.

(2) Educate operators and the public in proper vehicle operation procedures through training courses, public education, and community action programs.

(3) Emphasize proper operation of motorcycles in motorcycle license examinations.

(4) Ensure that highway warning signs are sufficient to cover the needs of motorcyclists, especially signs designating areas that may be particularly hazardous to motorcyclists.

(5) Permit renting of motorcycles by licensed operators only.

(6) Establish performance standards, such as minimum speed limits, for motorcycle operation on limited access highways.

5. MOTORCYCLE PERSONAL PROTECTIVE EQUIPMENT

a. Requirements.

Because of the high probability of injury resulting from motorcycle crashes the following requirements have been developed:

(1) Each motorcycle operator and passenger shall wear an approved safety helmet securely fastened on his head.

(2) Motorcycle operators shall wear approved eye protection devices.

b. Recommendations.

The Department of Transportation has not set performance specifications for safety helmets and eye protection devices. In the absence of Federal specifications, the State should set its own.

(1) Safety helmets.

(a) Safety helmet specifications.

The following specifications are recommended for consideration as a basis for State safety helmet performance specifications:

1 U. S. A. Standards Institute, Specification for Protective Headgear for Vehicle Users (Z90.1-1966).

2 The Z90.1-1966 specification modified to require only one impact per test site.

3 Motorcycle, Scooter and Allied Trades Association (MS&ATA), Specifications for Motorcycle Safety Helmets.

(b) Identification of approved helmets.

Helmets approved by the State should be labeled for identification by purchasers and enforcement officers. This label, indicating the helmet manufacturer's name or brand name and the model name or number, should be placed in a permanent manner at the outside lower rear of each helmet in letters of not less than one-quarter inch in height.

(c) Reflectorization.

While not required currently under the Motorcycle Safety Standard, it is recommended that each helmet have a reflectorized surface or have reflectorized material securely affixed on the left side, right side, and rear. This reflectorization should cover an area of at least 10 square inches at each of the specified sites and should preferably cover the entire helmet.

(2) Eye protection devices.

A satisfactory eye protection device can be goggles, a face shield, or safety glasses (excluding contact lenses).* Windshields are highly recommended as an additional measure. These eye protection devices should meet performance specifications established by the State.

(a) Eye protection approval.

1 State standard for motorcycle windshields should comply with the requirements of Federal Motor Vehicle Safety Standard 205:

* Whenever the motorcyclist wears corrective lenses, even though other eye protection devices may be worn, the use of safety glass or plastic lenses is recommended.

Glazing Materials - Passenger Cars, Multipurpose Passenger Vehicles, Motorcycles, Trucks, and Buses.*

2 Two standards developed under the auspices of the U. S. A. Standards Institute may be consulted for the development of performance specifications for other eye protection devices. These standards are:

a Standard Z26.1-1966: Safety Glazing Materials for Glazing Motor Vehicles Operated on Land Highways.

b Standard Z2.1-1959: Head, Eye and Respiratory Protection.

(b) Night use of eye protection.

Eye protection used at night should not be tinted.

(3) Other personal protective equipment.

Safety helmets and eye protection devices are the only personal protection equipment specified under the initial Motorcycle Safety Standard. Additional items, including protective footwear, gloves, jackets, and trousers should be encouraged in motorcycle operator education courses and public information programs.

6. MOTORCYCLE VEHICLE EQUIPMENT *

a. Rearview mirror.

The State program should ensure that each motorcycle is equipped with at least one rearview mirror which provides the operator with an adequate field of vision at least 200 feet to the rear.

b. Passenger seat and footrests.

The State program should ensure that a passenger is carried only on a motorcycle designed to carry a passenger and that the motorcycle is equipped with a seat and footrests designed and located for use by the passenger.

* Excerpts from this Safety Standard, 23 C.F.R. 255.21, are reproduced as Appendix G of this volume.

c. Lamps and reflective devices.

State standards for lamps, reflective devices, and associated equipment should comply with the requirements of Federal Motor Vehicle Safety Standard 108: Lamps, Reflective Devices, and Associated Equipment -- Passenger Cars, Multipurpose Passenger Vehicles, Trucks, Buses, Trailers, and Motorcycles.*

d. Other.

Each motorcycle should be equipped with such other equipment as may be required by the State.

7. MOTORCYCLE VEHICLE INSPECTION

a. Introduction.

(1) Each motorcycle should successfully pass a safety inspection at the time the motorcycle is initially registered and at least annually thereafter, or at such other time as may be designated under an approved experimental, pilot, or demonstration program implemented by the State.

(2) Recommendations for implementing motorcycle vehicle inspection set forth in this volume are intended to supplement, not supersede, recommendations set forth in Volume 1, of this Manual, Periodic Motor Vehicle Inspection.

b. Implementation.

(1) General.

(a) U. S. A. Standards Institute, American Standard Inspection Requirements for Motor Vehicles, Trailers, and Semitrailers Operated on Public Highways (D7.1-1963) indicates inspection procedures which should be used as a guide whenever practical.

(b) Training given to motor vehicle inspectors should include training on motorcycle inspection procedures.

(c) The motorcycle inspector should have passed an examination demonstrating his knowledge of motorcycle inspection procedures.

* Excerpts from this Safety Standard, 23 C.F.R. 255.21, applicable to motorcycles manufactured after December 31, 1968, are presented as Appendix F of this volume.

(d) A licensed motorcycle operator should perform all motorcycle operations that may be required as part of the inspection.

(2) Recommended inspection.

The items inspected in the State motorcycle inspection should include, but not be limited to, those listed below. It is not intended that this list require removal of wheels or disassembly of major components.

(a) Steering and wheel alinement.

1 Frame and front fork should not be bent or damaged.

2 Wheels should not be out of line.

3 Components should not be broken, loose, excessively worn, or missing.

4 Steering head bearing should not be loose, broken, or defective.

5 No portion of the handlebars may extend more than 15 inches higher than the level of the seat.

6 Handlebars should not be loose, bent, broken, or damaged.

(b) Suspension.

1 Motorcycle should not have broken, excessively worn, missing, defective, disconnected, or malfunctioning shock absorbers or other suspension components.

2 Motorcycle should not have broken or sagging springs.

(c) Tires, wheels, and rims.

1 Tires should not have less than 2/32 of an inch of the tread design remaining, or any part of the ply or cord exposed.

2 There should not be any tread cut or snag on the outside of the tire deep enough to expose the body cords.

3 Sidewalls should not be scuffed, cut, or snagged to the extent that body cords are damaged.

4 Tires should not have any bump, bulge, or knot apparently related to tread or sidewall separation or partial failure of the tire structure.

5 There should not be loose, missing, or defective air valves, bolts, nuts, or lugs.

6 There should not be bent, loose, cracked or damaged wheels, or defective rims or wheel flanges, or missing, broken, bent, loose, or damaged spokes.

7 Wheels should not have missing rivets, studs, or nuts.

8 Wheels should not have broken or out of adjustment bearings.

(d) Exhaust system.

Exhaust system or its elements, including exhaust guard, should be securely fastened.

(e) Fuel system.

1 Fuel should not leak at any point in the fuel system.

2 Fuel tank and piping should be securely installed.

3 Fuel tank should be vented.

4 Throttle should be alined and not binding; linkage (including cables) must not be worn, bent, broken, corroded, or missing.

5 Throttle should return to off or idle position when released on models with quick-release throttle.

(f) Brakes.

1 Brake system should not have worn, missing, or defective pins, cables, rods, clevises, or couplings.

2 Brake system should not have misalined anchor pins; frozen, rusted, or inoperative connections; missing spring clips; improper wheel bearing adjustment; or defective grease retainers.

3 Mechanical parts should not be misalined, badly worn, broken, or missing.

4 Operating levers and pedal shaft should be properly positioned and alined.

5 Motorcycle should not require more than 30 feet to stop from 20 miles per hour.

(g) Lamps and reflective devices.

1 General.

a Lamps and reflective devices on motorcycles manufactured after December 31, 1968 should comply with State standard substantially equivalent to Federal Motor Vehicle Safety Standard 108, 23 C.F.R. 255.21.

b Lamps should be mounted securely to prevent excessive vibration.

c Lamps should not have defective wiring, improper ground, or a defective switch.

d Power source should maintain lamps at required brightness for all conditions of operation.

2 Headlamp.

a Light output should be sufficient to make persons and objects clearly visible at night from a distance of at least 350 feet.

b Dimmer switch on double filament headlamp should be operative.

3 Tail lamp.

a Should be red in color.

b Should be visible at night under normal atmospheric conditions.

4 Stop signal lamp.

a Should be red or amber in color.

b Should be visible in normal sunlight from the rear.

c Should be activated by application of the brake.

d May be combined with other rear lamps.

e Should be extinguished when the turn signal lamp is functioning, if combined with the turn signal lamp.

5 License plate lamp.

a Should be white in color.

b License plates should be visible under normal atmospheric conditions at night from 50 feet to the rear.

c Should be activated by the same switch that activates the headlamps.

6 Turn signal system, if installed.

a Should be visible from the front sides and rear.

b Should have amber or white front lamps.

c Should have red or amber rear lamps.

7 Hazard warning lamps, if installed.

a Should have approved switch.

b Should flash front and rear turn signals simultaneously.

8 Reflectors.

a Lenses should not be cracked, broken, or missing.

b Lenses should be clean.

(h) Wiring and switches.

1 Switches and operating units should be in good condition and function properly.

2 Wiring should be properly installed and insulated, and so located such that damage will not be incurred.

3 All connections should be secure and have no signs of excessive corrosion.

(i) Horn.

1 Horn should be securely fastened to the vehicle.

2 Horn should be audible under normal traffic conditions for at least 200 feet.

(j) Windshield, if installed.

1 Should be free of cracks, discoloration, and scratches, and should be mounted so that the driver's vision is not obstructed.

2 Should comply with Federal Motor Vehicle Safety Standard 205.

(k) Body items.

1 There should not be loose, defective, dislocated, or dangerous items.

2 There should not be defective or dislocated parts projecting from the vehicle.

3 Engine mounting frame or brackets should not be cracked or broken.

4 Fenders and mudguards should not be broken, missing, or of inadequate design.

5 Footrests should be securely mounted and properly located.

6 Seat should be properly and securely attached.

7 If installed, sidecar should be properly attached, and comply with lighting, tire, and braking requirements.

8 Clutch must be alined and not binding; cable or linkage should not be worn, twisted, corroded, broken, or missing.

9 Drive chain should be undamaged, properly adjusted, and lubricated.

10 Lubrication system should not have excessive oil leaks.

11 Center or side stand should be in proper working order.

12 Seats and their springs should not be broken or otherwise defective.

(l) Rearview mirror.

1 Should permit a clear view to the rear of the vehicle for 200 feet.

2 Should not be cracked or discolored.

3 Should not be missing or improperly installed.

(m) Other.

1 Any other component or assembly not previously mentioned, which is in an obviously unsafe condition or which constitutes a hazard to the safe and proper operation of the vehicle, may be deemed sufficient justification to deny inspection certification until such condition or hazard has been corrected.

(n) Registration.

1 Motorcycle should be properly registered.

2 Registration plate should not be obscured.

3 Registration plate should not be installed more than 30 degrees from the vertical position.

4 Registration plate should be firmly affixed in a position where it does not create a hazard to the operation of the motorcycle.

5 Registration plate should not be affixed with the bottom of the plate less than 12 inches from the ground.

c. Certification of inspection.

(1) Upon successful completion of the vehicle inspection each motorcycle should receive a certificate of inspection.

(2) This certificate should be of such a form that it can be permanently affixed to the motorcycle.

8. MOTORCYCLE CRASH AND INJURY RECORDS AND REPORTS

a. Introduction.

(1) Detailed data on motorcycle accidents are necessary to identify crash and injury causes and trends and to develop preventive measures. These data gathered over a number of years can also validate or refute the efficacy of specific safety equipment worn by the rider or installed on the motorcycle.

(2) There is a disparity between the number of motorcycle crashes recorded by the States and estimates of total recordable motorcycle crashes made by the National Safety Council. This situation can be corrected by instituting a systematic approach to recording motorcycle crash data.

b. Objectives.

(1) All reportable motorcycle crashes should be reported and recorded at the State level. Reportable motorcycle crashes should include all motorcycle crashes occurring on public roadways resulting in:

(a) Fatality.

(b) Personal injury.

(c) Damage to the vehicle to the extent that it cannot be driven from the scene under its own power, in its customary manner, without further damage or hazard to itself, other traffic elements, or the roadway and, therefore, requires towing or carrying, including that in or on another vehicle.

(2) State and local traffic records systems should include provisions for reporting comprehensive motorcycle crash and injury data. At least the following supplemental data should be reported on motorcycle crashes.

(a) Vehicle identification information (make, model, model year, engine displacement, vehicle identification number).

(b) Specific nature and location of protective equipment worn. If not worn, or worn appropriately, this should be specified.

(c) Specific nature of vehicle safety equipment mounted on the motorcycle.

(d) Specific nature and location of damage to personal and to vehicle protective equipment.

(e) Operator experience (time operating, how instructed, etc.).

(f) Motorcycle status (owned, borrowed, rented, etc.).

(3) States should create a data base on motorcycle crashes and injuries, maintained in a manner to facilitate motorcycle crash and injury research and evaluation of program efficiency.

c. Implementation.

The following suggestions should be considered concerning motorcycle crash and injury records and reports in the State traffic records system.

(1) States should identify motorcycle crash and injury information requirements and encourage thorough motorcycle crash and injury investigation by State and local authorities.

(2) States should develop a short supplemental motorcycle crash and injury reporting form in a standard form to ensure that a comprehensive report is submitted on motorcycle crashes.*

(3) States should establish procedures to ensure timely reporting of adequate data from local and other State levels to the State agency responsible for traffic records.

(4) The State agency responsible for traffic records should establish adequate procedures for recording and retrieving motorcycle crash and injury data.

(5) Motorcycle crash and injury data should be reported and recorded in accordance with guidelines set forth in Volume 10 of this Manual, Traffic Records.

* A supplemental motorcycle accident report form developed for a singular study by the California Highway Patrol is presented as Appendix H.

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

NATIONAL HIGHWAY SAFETY BUREAU

HIGHWAY SAFETY PROGRAM MANUAL

VOLUME 3 Motorcycle Safety	TRANSMITTAL 2
CHAPTER V. Program Evaluation	January 17, 1969

(42-01)

Par. 1. Introduction
2. Evaluation Objectives
3. Evaluation Planning
4. Evaluation Procedure

1. INTRODUCTION

a. The motorcycle safety program should be periodically evaluated to determine the effectiveness of the program as measured against the requirements of the Motorcycle Safety Standard and established State objectives.

b. Each State should define qualitative and quantitative measures to evaluate its progress in reducing the frequency and severity of motorcycle crashes and injuries.

c. Based on quantitative evaluation, the State should plan long- and short-range programs to reduce the frequency and severity of motorcycle crashes and injuries and identify areas of research and information requirements.

2. EVALUATION OBJECTIVES

a. Determine program status and progress made since the last evaluation.

b. Identify areas where program adjustment or additional emphasis is needed.

c. Determine areas which have a high payoff in terms of motorcycle safety.

d. Optimize effort applied and make program administration more efficient.

e. Gather data needed for reporting purposes and to serve as the basis of the evaluation.

3. EVALUATION PLANNING

Prior to the implementation of a motorcycle safety program, certain steps should be taken to facilitate a comprehensive evaluation.

a. Short- and long-range goals and their timetables to be met by the program should be established.

b. Where practical, a budget should be developed for each program area.

c. Procedures for performing the evaluation should be defined.

d. Data that will be required and measurement techniques that will be needed should be defined.

e. Where available, preimplementation data should be gathered for comparison with data gathered during evaluation.

f. An implementation schedule should be set for the program.

4. EVALUATION PROCEDURE

a. Qualitative measures.

(1) The State program should be measured against established objectives and the implementation schedule to determine progress made.

(2) The following questions may be helpful in making judgments as to the quality and value of the State motorcycle safety program.

(a) Licensing of operators.

Is each person who operates a motorcycle required to:

1 Pass an initial examination designed especially for motorcycle operation?

2 Pass a periodic reexamination designed especially for motorcycle operation?

3 Hold only one license, either a license issued specifically for motorcycle use or an automobile driver's license endorsed for motorcycle use?

(b) Personal protective equipment.

1 Is each motorcycle operator required to wear an approved helmet on his head?

2 Is each motorcycle operator required to wear approved eye protection devices?

3 Is each motorcycle passenger required to wear an approved helmet?

4 Has the State adopted performance specifications for safety helmets and eye protection devices?

(c) Vehicle equipment.

1 Are a seat and footrests for passengers required on motorcycles before passengers may be carried?

2 Must each motorcycle be equipped with a rear-view mirror?

(d) Vehicle inspection.

Must each motorcycle be inspected:

1 At the time it is initially registered?

2 On a periodic basis, at least annually?

b. Quantitative measures.

The State should define quantitative measures to evaluate progress made in reducing the frequency and severity of motorcycle crashes and injuries. The following are examples of quantitative measures which could be used.

(1) Crash rate.

The crash rate should be recorded per registered motorcycle and per unit distance traveled by motorcycles. A recent national study*

* Motorcycle Safety - Final Report (FH-11-6543), 1968. See Appendix C.

indicates that 4,700 miles per year is a reasonable approximation for the annual number of miles traveled by a motorcycle, but this may vary considerably from State to State, and with various circumstances of use.

(2) Fatality rate.

The fatality rate should be recorded per registered motorcycle and per unit distance traveled by motorcycles. The extent to which given blood alcohol concentrations are present among fatally injured drivers and passengers should also be determined using methods in parallel with those given in Volume 8, Alcohol in Relation to Highway Safety.

(3) Motorcycle rates vs. automobile rates.

Annual comparison of motorcycle and automobile crash and fatality rates can indicate effectiveness of safety programs and signify developing trends. The sample table in Exhibit I, following page 5, entitled "Comparison of Passenger Car and Motorcycle Crash and Fatality Rates" indicates the desired type of comparison.

(4) Crash severity.

(a) Whenever possible, data regarding all categories of motorcycle crashes, such as collision, noncollision, location (intersection, nonintersection, rural, urban), night, day, dry, wet, age group of driver, etc., should be recorded.

(b) Percentages of severity (fatal, injury, and property damage) should be broken out for each class of crash, as is shown in Exhibit II, following Exhibit I, entitled "Classification of Motorcycle Crashes" and in Exhibit III, following Exhibit II, entitled "Motorcycle Crashes with Other Motor Vehicles."*

(c) The percentages of crashes of given degrees of severity (non-injury, non-fatal injury, and fatal injury) in which specific protective equipment was being appropriately used should also be determined.

(d) The examination of crash severity permits identification of high payoff areas where future efforts to reduce crashes and ameliorate injuries should be directed.

* Motorcycle Safety - Final Report (FH-11-6543), 1968. See Appendix C.

c. Identification of research areas.

(1) Based on an analysis of information available, the States should plan future research areas and indicate areas of information and program deficiencies.

(2) The research areas to be considered are the definition of where, when, why, and how crashes and injuries occur, and future preventative measures.

(3) Particular attention should be directed toward improving the data collection and reporting in those areas where existing data are inadequate or where information gaps exist. In addition to data of the types given above, information is greatly needed as to whether the presence of one or more passengers is associated with crash and injury rates out of proportion to their numbers on the motorcycles using the highways.

EXHIBIT I

COMPARISON OF PASSENGER CAR AND MOTORCYCLE CRASH AND FATALITY RATES

	Passenger Cars		Motorcycles	
	1966	1967	1966	1967
Registered Vehicles (millions)	78.4	80.4	1.75	2.19
Vehicle Miles (billions)	745	780	8.3	10.4
Total Crashes (millions)	20.8	20.9	.30	.27
Vehicle Occupant Fatalities (thousands)	35.0	35.2	2.16	2.00
Crash Rate				
Per 100 vehicles	26.5	25.9	17.2	12.2
Per million vehicle miles	27.9	26.7	36.4	25.7
Fatality Rate				
Per 10,000 vehicles	4.5	4.4	12.0	9.1
Per 100 millions of vehicle miles	4.7	4.5	26.0	19.2

Note: The 1966 data are taken from Motorcycle Safety - Final Report (FH-11-6543). The 1967 data are based on an analysis of information supplied by the Bureau of Public Roads and the National Safety Council, using methods described in the above report.

EXHIBIT II

CLASSIFICATION OF MOTORCYCLE CRASHES

Class of Crash	Percentage of Total	Percentage Distribution by Severity Within Each Class		
		Fatal	Injury	Property Damage
Collision With:				
Motor Vehicle	71.7	1.1	71.8	27.1
Pedestrian	1.2	5.9	94.1	0.0
Railroad Train	0.0*	33.3	66.7	0.0
Bicycle	0.9	0.6	88.0	11.3
Animal	1.8	0.3	96.3	3.3
Fixed Object	3.4	2.8	81.9	15.3
Other Object	0.3	0.0	100.0	0.0
Noncollision:				
Ran Off Road	9.8	2.2	90.9	6.9
Overturned	8.6	0.5	94.8	4.7
Other	2.4	1.2	95.5	3.3
TOTAL	100.0	1.2	77.5	21.3

* Less than 0.05.

Note: This analysis is based on data from 10,800 motorcycle crashes which occurred in the period 1962-1966. Further details of the analysis and the specific sources of the data are contained in Appendix G of Motorcycle Safety - Final Report (FH-11-6543).

EXHIBIT III

MOTORCYCLE CRASHES WITH OTHER MOTOR VEHICLES

Directional Classification of Crash	Percentage of Total	Percentage Distribution by Severity Within Each Class		
		Fatal	Injury	Property Damage
At an intersection:				
Entering at angle	25.8	1.2	70.4	28.4
From same direction, both going straight	2.0	0.7	69.6	29.7
From same, one turning	8.1	0.9	73.0	26.1
From same, one stopped	6.0	0.0	59.0	41.0
From same, all others	0.7	2.1	55.5	42.5
From opposite, both straight	1.1	0.7	92.0	7.3
From opposite, one left	14.3	1.3	83.0	15.7
From opposite, all others	0.6	0.9	73.3	26.7
Not at an intersection:				
From opposite, both moving	4.2	3.9	76.5	19.6
From same direction, both moving	7.3	1.6	74.4	24.0
One parked	6.7	0.5	33.3	66.2
One stopped	4.5	0.0	56.9	43.1

EXHIBIT III
(Continued)

Directional Classification of Crash	Percentage of Total	Percentage Distribution by Severity Within Each Class		
		Fatal	Injury	Property Damage
Not at an intersection:				
One parking	0.4	0.0	66.9	33.1
One leaving parking spot	2.1	0.4	56.1	43.5
One entering driveway	10.3	1.0	74.4	24.7
One leaving driveway	4.7	0.8	63.2	36.1
All others	1.3	0.6	54.0	45.4
TOTAL	100.0	1.1	68.9	30.0

Note: This analysis is based on data from 6,000 motorcycle crashes which occurred in the period 1962-1966. Further details of the analysis and the specific sources of the data are contained in Appendix G of Motorcycle Safety - Final Report (FH-11-6543).

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VOLUME 3 Motorcycle Safety	TRANSMITTAL 2
CHAPTER VI. Reports	January 17, 1969

(42-01)

Par. 1. Introduction
2. Program Evaluation Reports
3. Reports to the National Highway Safety Bureau

1. INTRODUCTION

a. A reporting system should be established to assist the management of the motorcycle safety program.

b. The objectives of this system should be to:

(1) Enable functional State control of the motorcycle safety program.

(2) Provide for coordination of efforts between program areas.

(3) Keep management cognizant of what is being done in the State in the area of motorcycle safety.

(4) Maintain contact with local governments.

(5) Facilitate objective State evaluation of its program.

(6) Provide data for use in safety research.

(7) Enable the State to fulfill information requests from local, Federal, and other State agencies.

2. PROGRAM EVALUATION REPORTS

a. Management of the State motorcycle safety program should be provided with periodic evaluation summaries on the various program areas.

b. These evaluation summaries should include at least the following:

(1) Program area objectives.

(2) Program area implementation schedule.

(3) Progress made against objectives and the implementation schedule.

(4) Statistical data to show program effectiveness in terms of reduction of crashes and injuries of given severity.

(5) Any additional comments, including problems encountered, identified high payoff areas, suggested improvements or innovations in motorcycle safety program, etc.

3. REPORTS TO THE NATIONAL HIGHWAY SAFETY BUREAU

a. Crash and injury summary reports.

The NHSB intends to request periodic crash and injury summary reports from the States. These summaries should include at least the following:

(1) Number of registrations (motorcycle, motor-driven cycles).

(2) Number of licensed operators.

(3) Number of motorcycle crashes by severity (fatal, injury, property damage).

(4) Number of motorcycle crashes by type (collision with motor vehicle, pedestrian, fixed object, other; noncollision).

(5) Number of motorcycle crash fatalities (operator, passenger, other).

(6) Number of fatalities without safety helmet protection (operator, passenger).

b. Legislation.

State and local governments should submit to the National Highway Safety Bureau a copy of all laws passed and regulations implemented pertaining to motorcycles and motorcycle operations.

c. Standards.

Upon implementation of State performance standards on safety helmets, eye protection devices, and motorcycle vehicle equipment, a copy should be submitted to the National Highway Safety Bureau.

d. Program status reports.

The Motorcycle Safety Standard requires that the NHSB be provided with an evaluation summary of the State's motorcycle safety program.

(1) Periodic questionnaires.

The NHSB intends to send periodic questionnaires to the State requesting information relative to program progress as of the current date and where appropriate, an estimate of progress to some future date.

(2) Evaluation summary.

The NHSB intends to request a summary of the State evaluation of its motorcycle safety program.

HIGHWAY SAFETY PROGRAM MANUAL

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Par. 1. Introduction
2. Local Agencies Involved
3. Description of Activities

1. INTRODUCTION

The implementation of an effective State motorcycle safety program requires the participation and support of the local governments. It is at the local level where motorcycle safety can be most effectively fostered by campaigns which seek to develop well-informed, well-trained, and safety-motivated motorcycle operators.

2. LOCAL AGENCIES INVOLVED

The support of the following local agencies is needed for the successful operation of a comprehensive State motorcycle safety program.

a. Education agencies.

(1) School board.

(2) School administrators.

b. Local traffic agencies.

(1) Roadway maintenance departments.

(2) Traffic engineering departments.

c. Police departments.

d. Local safety agencies.

e. Local lawmaking bodies.

3. DESCRIPTION OF ACTIVITIES

Local agencies should perform the following activities to assist in the operation of the State motorcycle safety program.

a. Activities of education agencies.

(1) Development of motorcycle education and training courses.

(2) Operation of motorcycle education and training courses.

(a) As part of the school curriculum.

(b) As after-hours training courses.

(3) Evaluation of local motorcycle education and training activities.

b. Activities of local traffic agencies.

(1) Identification and marking of motorcycle roadway hazard areas and locations where there is a high incidence of motorcycle crashes.

(2) Elimination of motorcycle roadway hazards.

(3) Research into the causes of local motorcycle crashes and development of possible preventative measures.

c. Activities of police departments.

(1) Uniform enforcement of motorcycle traffic laws.

(2) Reporting of motorcycle crash data to the State agency responsible for traffic records.

(3) Promotion of motorcycle safety through community action programs, such as motorcycle operator education and training programs, safety seminars, public education, etc.

d. Activities of local safety agencies.

(1) Promotion of community interest in motorcycle safety through public education programs, civic associations, and other local organizations.

(2) Participation in local motorcycle safety research programs.

(3) Evaluation of the effect of the motorcycle safety program at the local level.

e. Activities of local lawmaking bodies.

(1) Enactment of local ordinances which may be required to carry out the provisions of the motorcycle safety program.

(2) Monitoring and assisting the motorcycle safety program at the local level.

APPENDIX A

Highway Safety Program Standard 4.4.3

MOTORCYCLE SAFETY

Purpose

To assure that motorcycles, motorcycle operators and their passengers meet standards which contribute to safe operation and protection from injuries.

Standard

For the purposes of this Standard a motorcycle is defined as any motor-driven vehicle having a seat or saddle for the use of the rider and designed to travel on not more than three wheels in contact with the ground, but excluding tractors and vehicles on which the operator and passengers ride within an enclosed cab.

Each State shall have a motorcycle safety program to ensure that only persons physically and mentally qualified will be licensed to operate a motorcycle; that protective safety equipment for drivers and passengers will be worn; and that the motorcycle meets standards for safety equipment.

I. The program shall provide as a minimum that:

A. Each person who operates a motorcycle:

1. Passes an examination or reexamination designed especially for motorcycle operation.

2. Holds a license issued specifically for motorcycle use or a regular license endorsed for each purpose.

B. Each motorcycle operator wears an approved safety helmet and eye protection when he is operating his vehicle on streets and highways.

C. Each motorcycle passenger wears an approved safety helmet, and is provided with a seat and footrest.

D. Each motorcycle is equipped with a rearview mirror.

E. Each motorcycle is inspected at the time it is initially registered and at least annually thereafter, or in accordance with the State's inspection requirements.*

II. The program shall be periodically evaluated by the State for its effectiveness in terms of reductions in accidents and their end results, and the National Highway Safety Bureau shall be provided with an evaluation summary.

* See Highway Safety Program Standard 4.4.1, Periodic Motor Vehicle Inspection.

APPENDIX B

GLOSSARY OF DEFINITIONS

This glossary defines those terms whose meanings may be unclear in the context in which they are used. These definitions are meant to apply only to the usage of these terms in this volume.

Eye Protection Devices - Goggles, a windshield on the vehicle, a face shield, or eye glasses (excluding contact lenses) which are constructed with safety lenses.

Highway or Street - The entire width between boundary lines of every way publicly maintained when any part thereof is open to the use of the public for purposes of vehicular travel.

Motorcycle - Any motor-driven vehicle having a seat or saddle for the use of the rider and designed to travel on not more than three wheels in contact with the ground, but excluding tractors and vehicles on which the operator and passengers ride within an enclosed cab.

Motorcycle License Examination - A test to determine the ability to operate a motorcycle - to include medical and vision screening, a knowledge test, and an operating test.

Motorcycle License Reexamination - A periodic test to confirm a continuing ability to operate a motorcycle - to include medical and vision screening and a knowledge test.

Motorcycle Vehicle Equipment - Any system, part, or component of a motorcycle as originally manufactured or any similar part of component manufactured or sold for replacement or improvement of such system, part, or component, or as an accessory or addition to the motorcycle.

Operator - A person who is in actual physical control of a motorcycle while it is being driven.

Passenger - A person riding on a motorcycle who is not the operator.

Personal Protective Equipment - Devices or items of apparel worn by a motorcycle rider to protect himself during operation or in the event of a crash.

Rider - Either the operator or the passenger of a motorcycle.

Roadway - That portion of a highway improved, designed, or ordinarily used for vehicular travel, exclusive of the berm or shoulder. In the event a highway includes two or more separate roadways the term "roadway" as used herein shall refer to any such roadway separately but not all such roadways collectively.

State - Any one of the 50 States, the District of Columbia, and Puerto Rico.

APPENDIX C

REFERENCES

The following is a selected list of recognized authoritative references which may be helpful in implementing the programs specified in this volume. This list is not meant to be a bibliography of all the documents available in this field.

California Highway Patrol. A Motorcycle Accident Study (1968). California Highway Patrol, Sacramento, California.

A study of fatal and injury-producing accidents occurring throughout the State of California, October 16 through November 30, 1967.

Motorcycle, Scooter and Allied Trades Association. Specifications for Motorcycle Safety Helmets. Motorcycle, Scooter and Allied Trades Association, Box 231, Worthington, Ohio 43085.

National Committee on Uniform Traffic Laws and Ordinances. Model Traffic Ordinance (1962). National Committee on Uniform Traffic Laws and Ordinances, 525 School Street, S. W., Washington, D. C. 20024.

A specimen set of motor vehicle laws designed and advanced as a comprehensive guide or standard for State motor vehicle and traffic laws.

National Highway Safety Bureau. Federal Motor Vehicle Safety Standard No. 108 - Lamps, Reflective Devices, and Associated Equipment -- Passenger Cars, Multipurpose Passenger Vehicles, Trucks, Buses, Trailers, and Motorcycles (1968). Motor Vehicle Safety Performance Service, National Highway Safety Bureau, Washington, D. C. 20591.

National Highway Safety Bureau. Federal Motor Vehicle Safety Standard No. 205 - Glazing Materials - Passenger Cars, Multipurpose Passenger Vehicles, Motorcycles, Trucks and Buses (1968). Motor Vehicle Safety Performance Service, National Highway Safety Bureau, Washington, D. C. 20591.

Reiss, Martin L., and Haley, Joseph A. Motorcycle Safety - Final Report (FH-11-6543) (1968). A report prepared for the National Highway Safety Bureau by Airborne Instruments Laboratory. Clearinghouse for Federal, Technical, and Scientific Information, 5285 Fort Royal Road, Springfield, Virginia 22151.

Royal Automobile Club and Auto Cycle Union. Training Scheme for Motorcyclists and Scooter Riders (1967). Royal Automobile Club and Auto Cycle Union, London, England.

U. S. A. Standards Institute. American Standard Inspection Requirements for Motor Vehicles, Trailers, and Semi-Trailers Operated on Public Highways - D7.1 (1963). U. S. A. Standards Institute, 10 East 40th Street, New York, New York 10016.

U. S. A. Standards Institute. American Standard Safety Code for Head, Eye and Respiratory Protection - Z2.1 (1959). U. S. A. Standards Institute, 10 East 40th Street, New York, New York 10016.

U. S. A. Standards Institute. American Standard Safety Code for Safety Glazing Materials for Glazing Motor Vehicles Operating on Land Highway - Z26.1 (1966). U. S. A. Standards Institute, 10 East 40th Street, New York, New York 10016.

U. S. A. Standards Institute. American Standard Specifications for Protective Headgear for Vehicle Users - Z90.1 (1966). U. S. A. Standards Institute, 10 East 40th Street, New York, New York 10016.

APPENDIX D

REPRESENTATIVE PROJECTS

There are many approaches possible to achieve greater safety in motorcycling. Listed below are examples of safety projects that have been or are being carried out. These representative projects are suggested to State and local governments as areas of activity in which a relatively high long-range benefit-cost ratio can be anticipated.

1. Operator Testing and Licensing

a. Development and validation of motorcycle operator knowledge and riding examinations.

b. Training of driver license examiners to conduct and evaluate motorcycle knowledge and road tests, including training examiners to operate lightweight motorcycles.

c. Development of off-street motorcycle license testing ranges. These ranges could also be used for operator training programs.

d. Development of appropriate questions pertaining to the rights of motorcyclists and the capabilities and limitations of motorcycles for inclusion in the knowledge tests and handbooks used by other classes of motor vehicle operators.

2. Education and Training

a. Development of a recommended motorcycle curriculum study unit for use by all schools within the political jurisdiction.

b. Employment of a motorcycle safety education specialist who would assist school systems and instructors in incorporating motorcycle safety information into existing driver education courses and in helping set up special operator training program.

c. Upgrading the skills of high school driver education teachers through college level courses in motorcycle safety. Programs such as this have been conducted at Oswego State College, Oswego, New York, Northern Illinois University, Dekalb, Illinois, and Arizona State University, Tempe, Arizona.

d. Development of commercial motorcycle safety training programs. Programs such as this are being conducted by the Auto Club Training Division, Brooklyn, New York, Driver Trainer Professionals, Ltd., Inc., Stamford, Connecticut, and Metropolitan Cycle Association, New York, New York.

e. Development and conduct of community sponsored rider training and education programs. Programs such as these include:

(1) Junior high school program - Oklahoma City.

(2) Operation BSA, Automobile Club of Southern California - Los Angeles.

(3) Ottawa Motorcycle Course - Ottawa, Canada.

(4) Training Scheme of the Royal Auto Club - Auto Cycle Union (RAC/ACU) - London, England.

(5) Training materials - in addition to the sources of training materials listed above and listed in Appendix E - Resource Organizations, training program kits and materials are available from:

(a) Universal Underwriters Insurance Co.
5115 Oak Street
Kansas City, Missouri 64112

(b) Montgomery Ward and Co., Inc.
619 West Chicago Avenue
Chicago, Illinois 60607

(c) Domestic and foreign motorcycle manufacturers.

APPENDIX E

RESOURCE ORGANIZATIONS

The following organizations have active programs in motorcycle safety.

American Association of Motor Vehicle Administrators
Room 404, Madison Building
1155 15th Street, N. W.
Washington, D. C. 20005

American Automobile Association
1712 G Street, N. W.
Washington, D. C. 20006

American Medical Association
Committee on Medical Aspects of Automobile Safety
535 North Dearborn Street
Chicago, Illinois 60610

American Motorcycle Association
5655 North High Street
Worthington, Ohio 43085

Injury Control Program, Public Health Service
U. S. Department of Health, Education and Welfare
222 East Central Parkway
Cincinnati, Ohio 45202

Insurance Institute for Highway Safety
2600 Virginia Avenue, N. W.
Washington, D. C. 20037

International Association of Chiefs of Police
1319 18th Street, N. W.
Washington, D. C. 20036

Motorcycle, Scooter and Allied Trades Association
5655 North High Street
Worthington, Ohio 43085

National Commission on Safety Education
National Education Association
1201 16th Street, N. W.
Washington, D. C. 20036

National Committee on Uniform Traffic Laws and Ordinances
525 School Street, S. W.
Washington, D. C. 20024

National Highway Safety Bureau
Federal Highway Administration
Washington, D. C. 20591

National Safety Council
425 North Michigan Avenue
Chicago, Illinois 60611

Safety Helmet Council of America
9107 Wilshire Boulevard
Beverly Hills, California 90210
(Especially for information on helmet standards and motorcyclist injuries)

Snell Memorial Foundation
2315 Stockton Boulevard
Sacramento, California 95818

Traffic Institute
Northwestern University
1804 Hinman Avenue
Evanston, Illinois 60204

United States of America Standards Institute
10 East 40th Street
New York, New York 10016

APPENDIX F

FEDERAL MOTOR VEHICLE SAFETY STANDARDS (23 C.F.R. 255.21)

Motor Vehicle Safety Standard No. 108

Lamps, Reflective Devices, and Associated Equipment --
Passenger Cars, Multipurpose Passenger Vehicles
Trucks, Buses, Trailers, and Motorcycles
Effective January 1, 1969
(Excerpts applicable to number, color and
location of motorcycle lamps and reflectors)

S1. Purpose and Scope. This standard specifies requirements for lamps, reflective devices, and associated equipment, for signaling and to enable safe operation in darkness and other conditions of reduced visibility.

S2. Application. This standard applies to passenger cars, multipurpose passenger vehicles, trucks, buses, trailers, and motorcycles, except pole trailers and trailer converter dollies.

S3. Requirements.

S3.1 Equipment.

S3.1.1 Except as provided in S3.1.1.1 through S3.1.1.11 vehicles shall be equipped with lamps, reflective devices, and associated equipment, in the numbers of units and designed to conform to the standards specified in . . .(b) Table III for passenger cars; motorcycles; and multipurpose passenger vehicles, trucks, trailers, and buses, of less than 80 inches overall width.

* * *

S3.2 Location of Lamps and Reflectors.

S3.2.1 Except as provided in S3.2.1.1 through S3.2.1.3, lamps, reflective devices and associated equipment required by S3.1 shall be installed in accordance with: . . .(b) Table IV for passenger cars; motorcycles; and multipurpose passenger vehicles, trucks, trailers, and buses of less than 80 inches overall width.

* * *

TABLE III

EQUIPMENT

* * *

Item	Motorcycles	In accordance with SAE Standard or Recommended Practice
Head lamps	1 white	J584, April 1964
Tail lamps	1 red	J585, June 1966
Stop lamps	1 red or amber	J586b, June 1966
License plate lamp	1 white	J587b, April 1964
Reflex reflectors	3 Class B red; 2 Class B amber	J594c, February 1965

TABLE IV

EQUIPMENT LOCATION

* * *

Item	Motorcycles	Height above road surface measured from center of item on vehicle at curb weight
Headlamps	On front centerline, except that, if two lamps are used, they may be symmetrically disposed about the front centerline.	Not less than 24 inches, nor more than 54 inches.
Tail lamps	On rear centerline except that, if two lamps are used, they may be symmetrically disposed about the rear centerline.	Not less than 15 inches, nor more than 72 inches.
Stop lamps	On rear centerline, except that, if two lamps are used, they may be symmetrically disposed about the rear centerline.	Not less than 15 inches, nor more than 72 inches.
License plate lamp	At rear license plate.	

TABLE IV
(Continued)

Item	Motorcycles	Height above road surface measured from center of item on vehicle at curb weight
Reflex reflectors	1 red on rear centerline, except that, if two reflectors are used on the rear, they may be symmetrically disposed about the centerline. 2 red - 1 on each side, as far aft as practicable. 2 amber - 1 on each side as far forward as practicable.	Not less than 15 inches, nor more than 60 inches.

* * *

APPENDIX G

FEDERAL MOTOR VEHICLE SAFETY STANDARDS (23 C.F.R. 255.21)

Motor Vehicle Safety Standard No. 205

Glazing Materials - Passenger Cars, Multipurpose Passenger Vehicles, Motorcycles, Trucks, and Buses

S1. Purpose and scope. This Standard specifies requirements for glazing materials to reduce lacerations to the face, scalp, and neck, and to minimize the possibility of occupants being thrown through the vehicle windows in collisions.

S2. Application. This standard applies to glazing materials for use in passenger cars, multipurpose passenger vehicles, motorcycles, trucks, and buses.

S3. Requirements.

S3.1 Materials. Except as provided in S3.2, glazing materials used in windshields, windows, and interior partitions shall conform to United States of America Standards Institute "American Standard Safety Code for Safety Glazing Materials for Glazing Motor Vehicles Operating on Land Highways," ASA Standard Z26.1-1966. July 15, 1966, (hereinafter referred to in this standard as Z26.1-1966).

* * *

S3.3 Edges. In vehicles, except school buses, exposed edges shall be treated in accordance with Society of Automotive Engineers Recommended Practice J673a, "Automotive Glazing," August 1967. In school buses, exposed edges shall be banded.

* * *

MOTORCYCLE ACCIDENT STUDY SUPPLEMENTAL ACCIDENT REPORT	ACCIDENT REPORT NUMBER	DATE OF ACCIDENT

MOTORCYCLE

MAKE	LICENSE
MODEL	MODEL YEAR
EQUIPMENT VIOLATIONS	CRASHBARS Yes No WINDSHIELD Yes No

RIDER OF MOTORCYCLE

NAME	AGE	MALE FEMALE
RIDER VIOLATIONS		

RIDER MOTORCYCLE EXPERIENCE (Years)	RIDER TOTAL DRIVING EXPERIENCE (Years)	CYCLE WAS: BORROWED OWNED	STOLEN RENTED
WAS RIDER WEARING A HELMET? YES NO	DESCRIBE ANY DAMAGE TO HELMET		
WAS RIDER WEARING GLASSES-GOGGLES-FACESHIELD	DESCRIBE ANY DAMAGE TO FACE PROTECTOR		
DESCRIBE FOOTWEAR	DESCRIBE JACKET & TROUSERS		

DESCRIBE INJURIES TO RIDER	FACE & EYES	HEAD
	FEET	OTHER

PASSENGER OF MOTORCYCLE

NAME	AGE	MALE FEMALE
PASSENGER WAS: FRIEND OF RIDER / RELATED TO RIDER / OWNER		

WAS PASSENGER WEARING A HELMET? YES NO	DESCRIBE ANY DAMAGE TO HELMET
WAS PASSENGER WEARING GLASSES-GOGGLES-FACESHIELD	DESCRIBE ANY DAMAGE TO FACE PROTECTOR
DESCRIBE FOOTWEAR	DESCRIBE JACKET & TROUSERS

DESCRIBE INJURIES TO PASSENGER	FACE & EYES	HEAD
	FEET	OTHER

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